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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,245	01/16/2002	Cathie J. Burke	106452	4390

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EXAMINER	
CHACKO DAVIS, DABORAH	
ART UNIT	**PAPER NUMBER**
1756	

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/046,245	BURKE ET AL.
	Examiner	Art Unit
	Daborah Chacko-Davis	1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) *10,11,25 and 26* is/are withdrawn from consideration.

5)☒ Claim(s) *1-9 and 12-17* is/are allowed.

6)☒ Claim(s) *18-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *01/16/2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 18-24, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,368,754 (Imai) in view of U. S. Patent No. 5,344,748 (Feely).

Imai, in col 2, lines 60-67, in col 3, lines 1-19, and lines 50-52, and lines 38-65, in col 5, lines 21-27, in col 6, lines 7-67, and in figures 9B, and 10B, discloses a patterned resist formed by a method comprising using a patterned mask (reticle) that includes a plurality of transparent regions (first mask on the reticle, reference 3a), a plurality of partially transmissive regions (a second mask on the reticle, reference 6a) and an opaque region, positioning the first mask of the reticle over a first area of the resist (resist composition of a photopolymer) coated substrate, and irradiating the resist to form a first pattern forming the greater sized contact hole, positioning the second mask (partially transmissive) of the same reticle is positioned at a second area of the resist coated substrate wherein the second area is irradiated with light through the second mask to form a second pattern forming the smaller sized contact hole, and developing the resist to transfer the first pattern and the second pattern (of topographical differences) to the resist (claims 18, and 23). Imai, in col 4, lines 36-44, in col 5, lines 8-30, and in figure 7, discloses first contact holes and second contact holes wherein the

second contact holes are about one-half the size of the first contact holes (at least a variation of about 5:1) (claim 21). Imai, in col 6, line 13, discloses that the resist used to coat the substrate is a negative resist (claim 24).

The difference between the claims and Imai is that Imai does not disclose that the first mask is fully transmissive and that the second mask is partially transmissive. Imai does not disclose that the mask is used to control the radiation transmitted onto the surface of the resist so that topographical differences between the first pattern and the second pattern (features) are from about 0.1 microns to about 5 microns (claim 19). Imai does not disclose that the resist thickness is from about 5 microns to about 500 microns (claim 20). Imai does not disclose that the features (first and second) have a width of from about 2 microns to about 3cm (claim 22). Imai does not disclose that the resist patterning process can be used to make an ink jet print head.

Feely, in col 8, lines 60-68, discloses the use of substrates that are coated with a photosensitive coating having a thickness of from about 0.5 to about 50 microns. Feely, in col 10, lines 46-69, discloses that the photomask that partially transmissive regions of transmittance that varies from 1 to 32% and even more, and transmissive regions that range in their transmission from 1 to 100%. Feely, in col 10, lines 25-69, and in col 12, lines 1-22, and in figures 7, 8, and 9, discloses that the topographical variations of the features can be manipulated by controlling the exposure dosage of actinic radiation. Feely, in col 2, lines 7-11, discloses that the method of patterning resists can be used to make ink jet print heads.

Therefore, it would be obvious to a skilled artisan to modify Imai by employing the mask suggested by Feely because Feely, in col 10, lines 60-69, discloses that the radiation attenuation feature of a photomask is especially useful for manipulating the thickness of a structure having different thicknesses along its width and length, varying from the full thickness of the deposited photosensitive coating down to the very thin layer on the substrate and that such varied topography on a substrate can be prepared using the process and a single attenuating mask pattern. It would be obvious to a skilled artisan to modify Imai by employing the method of patterning resists to manufacture ink jet print heads as taught by Feely, because Imai, in col 1, lines 7-8, and 10-11, discloses that method relates to manufacturing semiconductor devices and selectively designing LSI's.

Allowable Subject Matter

3. Claims 1-9, and 12-17, are allowable over the prior art of record (U. S. Patent No. 6,368,754 (Imai), U. S. Patent No. 5,344,748 (Feely), and U. S. Patent No. 5,485,181 (Convers)) because Imai in view of Feely fails to disclose a method of patterning a resist wherein the mask controls the amount of radiation transmitted onto the resist to be uniform over substantially the entire portions of the surface of the resist that is irradiated.

Response to Arguments

4. Applicant's arguments, see Request for reconsideration, filed February 11, 2004, with respect to claims 1-9, and 12-17, have been fully considered and are persuasive. The 103 rejections made over claims 1-9, and 12-17, have been withdrawn. Applicant's

arguments filed February 11, 2004, with respect to claims 18-24, have been fully considered but they are not persuasive. The 103 rejection made over claims 1-9, and 12-17, is maintained.

A) Applicants argue that Imai in view of Feely fails to disclose a patterned resist formed by a method of using a mask that controls the radiation transmitted through the mask onto the resist wherein the radiation transmitted is uniform over substantially the entire surface of the substrate.

Imai in view of Feely teaches a patterned resist. The process limitations in claims "a patterned resist formed by a method comprising: providing a mask comprising at least one transparent region and at least one opaque region;....., wherein the mask controls the amount of radiation transmitted onto the resist to be substantially uniform over substantially the entire portion of the surface of the resist that is irradiated" are noted. However, when the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to applicant to establish that their product is patentably distinct and not the examiner to show the same process of making. *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

The disclosed product of Imai in view of Feely and the instantly claimed product appear to be essentially the same, comprised of the same components, a patterned resist on the substrate, and used in the same manner. In the event any differences can be shown for the product of the product-by-process claims 18-24 as opposed to the product taught by Imai in view of Feely, such differences would have been obvious to.

one of ordinary skill in the art as a routine modification of the product in the absence of a showing of unexpected results. See *In re Thorpe*, 227 USPQ 964 (Fed. Cir. 1985).

Applicant further argues that the reference does not teach the instant product by process limitations. As discussed above, the product by process limitations have been noted. However, it has been held that even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art product was made by a different process. See *In re Thorpe*, 227 USPQ 964.

Once the examiner provides a rationale tending to show that the claimed product appears to be the same or only slightly different from that of the prior art, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the product of the prior art. Applicant has not met this burden. There has been no showing that the product instantly claimed differs structurally or in any way, by virtue of its process of making, from the product taught by the prior art.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd

May 3, 2004.

MARK F. HUFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700